CLAIMS

1. A method for preparing a basement membrane wherein cells having an ability to form a basement membrane are cultured on a support structure with a sugar-chain coat which can localize a receptor having an activity to accumulate basement membrane components onto a basal surface of the cells having an ability to form a basement membrane.

2. The method for preparing a basement membrane according to claim 1, wherein the cells having an ability to form a basement membrane are cultured on of a support structure with both opposite surfaces coated by a sugar chain.

3. The method for preparing a basement membrane according to claim 1, wherein a component secreted from the cells having an ability to form a basement membrane is used as a basement membrane component.

4. The method for preparing a basement membrane according to claim 1, wherein a sugar-chain coat, which can possibly adhere the cells having an ability to form a basement membrane onto a support structure through the binding between a sugar chain or a part of a sugar chain and a receptor, is used.

5. The method for preparing a basement membrane according to claim 4, wherein a sugar-chain coat is used, the sugar chain or a part of the sugar chain that binds to a receptor can be replaced by a basement membrane component.

6. The method for preparing a basement membrane according to claim 1, wherein the support structure with a sugar-chain coat is a support

structure coated with a polymer having a sugar chain.

7. The method for preparing a basement membrane according to claim 6, wherein the polymer having a sugar chain is a polymer having a sugar chain with β-D-glucopyranosyl nonreducing end or 2-acetoamide-2-deoxy-β-D-glucopyranosyl nonreducing end.

8. The method for preparing a basement membrane according to claim 7, wherein one or more types of polymers selected from PV-GlcNAc, PV-CA and PV-Lam is used as the polymer having a sugar chain.

9. The method for preparing a basement membrane according to claim 1, wherein the cells having an ability to form a basement membrane are cocultured with fibroblasts or their alternatives.

10. The method for preparing a basement membrane according to claim 1, wherein the cells having an ability to form a basement membrane are cultured in the presence of one or more types of basement membrane components.

11. The method for preparing a basement membrane according claim 1, wherein the cells having an ability to form a basement membrane are cultured in the presence of TGF-β (transforming growth factor).

12. The method for preparing a basement membrane according to claim 1, wherein the cells having an ability to form a basement membrane are epithelial cells, endothelial cells or mesenchymal cells.

13. The method for preparing a basement membrane according to claim

1, wherein the cells and/or fibroblasts having an ability to form a basement membrane are basement membrane component-hyperexpressing cells into which genes of one or more types of a basement membrane component are transfected.

14. The method for preparing a basement membrane according to claim 1, wherein the support structure is a fibrous collagen.

15. A tissue model which can be obtained by the method for preparing a basement membrane according to claim 1.

16. A test tissue kit including a tissue model which can be obtained by the method for preparing a basement membrane according to claim 1.

17. A method for constructing a basement membrane specimen wherein cells having an ability to form a basement membrane adhered onto a support structure through a basement membrane are removed using a solvent having the ability to lyse lipid of the cells and an alkaline solution.

18. The method for constructing a basement membrane specimen according to claim 17, wherein the treatment to remove proteinous and nucleic residues using an alkaline solution is conducted after or at the same time as the delipidating treatment using a solvent having the ability to lyse lipid is conducted.

19. The method for constructing a basement membrane specimen according to claim 17, wherein the solvent having the ability to lyse lipid is

a surface active agent.

20. The method for constructing a basement membrane specimen according to claim 19, wherein the surface active agent is Triton X-100.

21. The method for constructing a basement membrane specimen according to claim 17, wherein the alkaline solution is an alkaline solution with pH 8 - 14.

22. The method for constructing a basement membrane specimen according to claim 21, wherein the alkaline solution is an alkaline solution with pH 9 - 10.

23. The method for constructing a basement membrane specimen according to claim 17, wherein a protease inhibitor is further used.

24. The method for constructing a basement membrane specimen according to claim 17, wherein the basement membrane is a basement membrane prepared by culturing the cells having an ability to form a basement membrane on a collagen gel wherein fibroblasts are embedded.

25. The method for constructing a basement membrane specimen according to claim 17, wherein the basement membrane is a basement membrane prepared by culturing the cells having an ability to form a basement membrane on a support structure with a sugar-chain coat which can localize a receptor having an activity to accumulate a basement membrane component on the basal surface of the cells having an ability to form a basement membrane.

26. The method for constructing a basement membrane specimen according to claim 17, wherein the basement membrane is a basement membrane prepared by culturing the cells having an ability to form a basement membrane in the presence of a matrix metalloproteinase.

27. The method for constructing a basement membrane specimen according to claim 17, wherein the basement membrane is a basement membrane prepared by culturing a basement membrane component and/or growth factor hyperexpressing cells into which one or more types of genes and/or growth factors of a basement membrane component are introduced.

28. A basement membrane specimen which can be obtained by the method for constructing a basement membrane specimen according to claim 17.

29. The basement membrane specimen according to claim 28, which is detached from a support structure.

30. A process for producing a reconstituted artificial tissue wherein certain cells having an ability to form a basement membrane are seeded and cultured on a basement membrane specimen or amorphously basement membrane components-deposited specimen.

31. The process for producing a reconstituted artificial tissue according to claim 30, wherein the cells having an ability to form a basement membrane have a different origin from that of a basement membrane specimen or amorphously basement membrane components-deposited specimen.

32. The process for producing a reconstituted artificial tissue

according to claim 30, wherein the basement membrane specimen or the amorphously basement membrane components-deposited specimen is obtained by removing the cells having an ability to form a basement membrane which are adhered onto a support structure through a basement membrane or basement membrane components-amorphous deposits using a solvent having the ability to lyse lipid of the cells and an alkaline solution.

33. The process for producing a reconstituted artificial tissue according to claim 32, wherein the solvent having the ability to lyse lipid of cells is a surface active agent.

34. The process for producing a reconstituted artificial tissue according to claim 32, wherein the alkaline solution is an alkaline solution with pH 8 - 14.

35. The process for producing a reconstituted artificial tissue according to claim 34, wherein the alkaline solution is an alkaline solution with pH 9 - 10.

36. The process for producing a reconstituted artificial tissue according to claim 32, wherein a protease inhibitor is further used.

37. The process for producing a reconstituted artificial tissue according to claim 30, wherein the basement membrane specimen or the basement membrane components-amorphous deposits specimen is obtained from a basement membrane or a basement membrane components-amorphous deposits prepared by culturing the cells having an ability to form a basement membrane on a collagen gel wherein fibroblasts are embedded.

38. The process for producing a reconstituted artificial tissue according to claim 30, wherein the basement membrane specimen or the basement membrane components-amorphous deposits specimen is obtained from a basement membrane or a basement membrane components-amorphous deposits prepared by culturing the cells having an ability to form a basement membrane on a support structure with a sugar chain-coat which can localize a receptor having an activity to accumulate a basement membrane component onto the basal surface of the cells having an ability to form a basement membrane or the surface of the basement membrane components-amorphous deposits.

39. The process for producing a reconstituted artificial tissue according to claims 30, wherein the basement membrane specimen or the basement membrane components-amorphous deposits specimen is obtained from a basement membrane or a basement membrane components-amorphous deposits prepared by culturing the cells having an ability to form a basement membrane in the presence of a matrix metalloproteinase.

40. The process for producing a reconstituted artificial tissue according to claim 30, wherein the basement membrane specimen or the basement membrane components-amorphous deposits specimen is obtained from a basement membrane or a basement membrane components-amorphous deposit prepared by culturing a basement membrane component and/or growth factor hyperexpressing cells into which one or more types of genes and/or growth factors of basement membrane components are transfected.

41. A reconstituted artificial tissue which can be obtained by the

production process according to claim 30.

42. The reconstituted artificial tissue according to claim 41, wherein the reconstituted artificial tissue is an artificial blood vessel, an artificial lung, an artificial liver, an artificial kidney, an artificial skin or an artificial cornea.

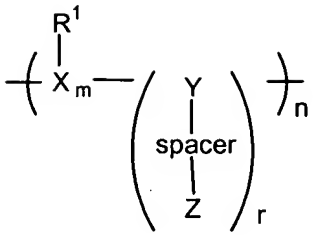
43. The reconstituted artificial tissue according to claim 41, wherein the reconstituted artificial tissue is an artificial human tissue.

44. The reconstituted artificial tissue according to claim 41, which is detached from a support structure.

45. A method for testing the safety and toxicity of a test substance wherein the reconstituted artificial tissue according to claim 41 is used.

46. A basement membrane specimen or an artificial tissue which is formed on a protein support structure temporarily adhered to plastic surface through an adsorptive polymer by hydrophobic bonding having a hydrophobic linear carbon skeleton and a functional group which can react with protein in a molecule.

47. The basement membrane specimen or the artificial tissue according to claim 46, wherein the adsorptive polymer by hydrophobic bonding is an adsorptive polymer by hydrophobic bonding shown by the following general formula [I]:
(chemical formula 1)



(In the formula, X denotes CH or NHCHCO, Y denotes CH or $NHCR^2CO$, R^1 denotes H, alkyl group of C1 - C3, alkoxy group of C1 - C3 or aryl group of C6 - C8, R^2 denotes H or alkyl group of C1 - C3, Z denotes a functional group (reactional group) optionally bonded to each other, spacer denotes $(-CH_2-)p$ or $(-NHCHR^3HCO-)q$, R^3 denotes H or alkyl group of C1 - C3, m denotes an integral number greater or equal to 1, n denotes an integral number between 100 and 20000, p and q independently denote 0 or integral numbers 1 - 8, r denotes an integral number greater or equal to 1).

48. The basement membrane specimen or the artificial tissue according to claim 47, wherein the adsorptive polymer by hydrophobic bonding shown by the general formula [I] is an alternating copolymer of methyl vinyl ether and maleic anhydride.

49. The basement membrane specimen or the artificial tissue according to claim 46, wherein the basement membrane specimen is a basement membrane specimen constructed by removing the cells having an ability to form a basement membrane adhered onto a protein support structure through a basement membrane using a solvent having the ability to lyse lipid of the cells and an alkaline solution.

50. The basement membrane specimen or the artificial tissue according

to claims 46, wherein the artificial tissue is an artificial tissue prepared by culturing the cells having an ability to form a basement membrane on a protein support structure.

51. The basement membrane specimen or the artificial tissue according to claim 46, wherein the artificial tissue is an artificial tissue prepared by culturing the cells having an ability to form a basement membrane on a protein support structure with a sugar-chain coat which can localize a receptor having an activity to accumulate a basement membrane component onto the basal surface of the cells having an ability to form a basement membrane.

52. The basement membrane specimen or the artificial tissue according to claim 46, wherein the protein support structure is a collagen gel wherein fibroblasts are embedded.

53. The basement membrane specimen or the artificial tissue according to claim 46, wherein the artificial tissue is an artificial tissue prepared by culturing the cells having an ability to form a basement membrane in the presence of a matrix metalloproteinase.

54. The basement membrane specimen or the artificial tissue according to claim 46, wherein the artificial tissue is an artificial tissue prepared by culturing a basement membrane component and/or growth factor hyperexpressing cells into which one or more types of genes and/or growth factors of basement membrane components are transfected.

55. The basement membrane specimen or the artificial tissue according to claim 46, wherein the artificial tissue is a reconstituted artificial

tissue prepared by seeding and culturing the cells having certain ability to form a basement membrane on a basement membrane specimen.

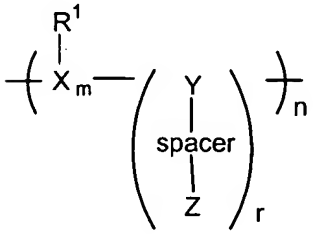
56. The basement membrane specimen or the artificial tissue according to claim 46, wherein the cells having an ability to form a basement membrane are epithelial cells or endothelial cells.

57. The basement membrane specimen or the artificial tissue according to claims 46, wherein the artificial tissue is an artificial epidermal tissue, an artificial corneal epithelial tissue, an artificial alveolar epithelial tissue, an artificial respiratory epithelial tissue, an artificial renal glomerular tissue, an artificial hepatic parenchymal tissue or an artificial pulmonary arterial vascular endothelial tissue, or, an artificial blood vessel, an artificial lung, an artificial liver, an artificial kidney, an artificial skin or an artificial cornea.

58. A process for producing a basement membrane specimen or an artificial tissue which can be transplanted while maintaining the structure of a basement membrane wherein a protein support structure is temporarily adhered to plastic surface through an adsorptive polymer by hydrophobic bonding having a hydrophobic linear carbon skeleton and a functional group which can react with protein in a molecule, and a basement membrane specimen or an artificial tissue is formed thereon, and a protein support structure supporting a basement membrane specimen or an artificial tissue is physically detached from plastic surface when desired.

59. The process for producing a basement membrane specimen or an artificial tissue which can be transplanted while maintaining the structure of a basement membrane according to claim 58, wherein the

adsorptive polymer by hydrophobic bonding is an adsorptive polymer by hydrophobic bonding shown by the following general formula [I]: (chemical formula 2)



(In the formula, X denotes CH or NHCHCO, Y denotes CH or $NHCR^2CO$, R^1 denotes H, alkyl group of C1 - C3, alkoxy group of C1 - C3 or aryl group of C6 - C8, R^2 denotes H or alkyl group of C1 - C3, Z denotes a functional group (reactional group) optionally bonded to each other, spacer denotes $(-CH_2-)p$ or $(-NHCHR^3HCO-)q$, R^3 denotes H or alkyl group of C1 - C3, m denotes an integral number greater or equal to 1, n denotes an integral number between 100 and 20000, p and q independently denote 0 or integral numbers 1 - 8, r denotes an integral number greater or equal to 1).

61. The process for producing a basement membrane specimen or an artificial tissue which can be transplanted while maintaining the structure of a basement membrane according to claim 59, wherein the adsorptive polymer by hydrophobic bonding shown by the general formula [I] is an alternating copolymer of methyl vinyl ether and maleic anhydride.

61. The process for producing a basement membrane specimen or an artificial tissue which can be transplanted while maintaining the structure of a basement membrane according to claim 58, wherein the

basement membrane specimen is a basement membrane specimen constructed by removing the cells having an ability to form a basement membrane adhered onto a protein support structure through a basement membrane using a solvent having the ability to lyse lipid of the cells and an alkaline solution.

62. The process for producing a basement membrane specimen or an artificial tissue which can be transplanted while maintaining the structure of a basement membrane according to claim 58, wherein the artificial tissue is a basement membrane prepared by culturing the cells having an ability to form a basement membrane on a protein support structure.

63. The process for producing a basement membrane specimen or an artificial tissue which can be transplanted while maintaining the structure of a basement membrane according to claim 58, wherein the artificial tissue is an artificial tissue prepared by culturing the cells having an ability to form a basement membrane on a protein support structure with a sugar-chain coat which can localize a receptor having an activity to accumulate a basement membrane component onto the basal surface of the cells having an ability to form a basement membrane.

64. The process for producing a basement membrane specimen or an artificial tissue which can be transplanted while maintaining the structure of a basement membrane according to claim 58, wherein the artificial tissue is a reconstituted artificial tissue prepared by seeding and culturing the cells having a certain ability to form a basement membrane on the basement membrane specimen.

65. The process for producing a basement membrane specimen or an artificial tissue which can be transplanted while maintaining the structure of a basement membrane according to claim 58, wherein the cells having an ability to form a basement membrane are epithelial cells or endothelial cells.

66. The process for producing a basement membrane specimen or an artificial tissue which can be transplanted while maintaining the structure of a basement membrane according to claim 58, wherein the protein support structure is a collagen gel wherein fibroblasts are embedded.

67. The process for producing the basement membrane specimen or the artificial tissue which can be transplanted while maintaining the structure of a basement membrane according to claim 58, wherein the artificial tissue is an artificial epidermal tissue, an artificial corneal epithelial tissue, an artificial alveolar epithelial tissue, an artificial respiratory epithelial tissue, an artificial renal glomerular tissue, an artificial hepatic parenchymal tissue or an artificial pulmonary arterial vascular endothelial tissue, or, an artificial blood vessel, an artificial lung, an artificial liver, an artificial kidney, an artificial skin or an artificial cornea.